

Curriculum Vitae

James C. Schnable

Quantitative Life Sciences Initiative
Center for Plant Science Innovation
Department of Agronomy & Horticulture

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^aClickable hyperlinks are in blue throughout

Employment

University of Nebraska-Lincoln	
Professor, Department of Agronomy and Horticulture	2022-Present
Nebraska Corn Checkoff Presidential Chair	2023-Present
Charles O. Gardner Professor of Agronomy	2019-2023
Associate Professor, Department of Agronomy and Horticulture	2019-2022
Assistant Professor, Department of Agronomy and Horticulture	2014-2019
Alphabet, Google, X	
Technology Lead (<i>Interim</i>)	2022
Danforth Plant Science Center & Chinese Academy of Agricultural Sciences	
NSF PGRP Fellowship Supported Visiting Scholar	2013-2014

Education

PhD Plant Biology	2008-2012
University of California-Berkeley	
BA Biology	2004-2008
Cornell University	

Selected Honors and Awards

Fellow	2023
Nebraska Center for Entrepreneurship	
Fellow	2022
PhenoRob	
Outstanding Paper of the Year	2020
The Plant Phenome Journal	
Early Career Award	2019
American Society of Plant Biologists	
Plant Phenotyping Early Career Award	2019
North American Plant Phenotyping Network	
Outstanding Scientific Article Award	2018
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	

Marcus Rhoades Early Career Award Maize Genetics Community	2018
Tansley Medal Finalist New Phytologist Trust	2018
Junior Faculty Excellence in Research Award University of Nebraska-Lincoln	2016

Research Support

\$29.6M in total federal funding as PI/co-PI 2015-Present
(Excludes \$20M NSF Center for Root and Rhizobiome Innovation award (2016) and \$20M NSF AI Institute for Resilient Agriculture award (2021).)

Federal (Current)

- USDA-NIFA “Improving Causal Gene Detection across Crop and Livestock Species.” (co-PI) 2023. \$1.3M
- DOE “Phenotypic and Molecular Characterization of Nitrogen Responsive Genes in Sorghum.” (co-PI) 2022-2025. \$2.7M
- DOE “TGCM: (T)rait, (G)ene, and (C)rop Growth (M)odel directed targeted gene characterization in sorghum.” (PI) 2019-2023. \$2.7M
- NSF “BTT EAGER: A wearable plant sensor for real-time monitoring of sap flow and stem diameter to accelerate breeding for water use efficiency.” (PI) 2019-2023. \$300k
- USDA-NIFA “High Intensity Phenotyping Sites: Transitioning To A Nationwide Plant Phenotyping Network.” (co-PI) 2020-2023. \$3M
- USDA-NIFA “High Intensity Phenotyping Sites: A multi-scale, multi-modal sensing and sense-making cyber-ecosystem for Genomes to Fields.” (co-PI) 2020-2023. \$2.7M
- USDA-NIFA “CPS: Medium: Field-scale, single plant-resolution agricultural management using coupled molecular and macro sensing and multi-scale data fusion and modeling” (co-PI) (2020-2023) \$1.05M
- ARPA-E “Soil Organic Carbon Networked Measurement System (SOCNET)” (co-PI) 2020-2023 \$1.9M
- NSF “RII Track-2 FEC: Functional analysis of nitrogen responsive networks in Sorghum.” (co-PI) 2018-2023. \$4M
- FFAR “Crops in silico: Increasing crop production by connecting models from the microscale to the macroscale.” (co-PI) 2019-2023. \$5M
- NSF “AI Institute for Resilient Agriculture” (Investigator) 2021-2026 \$20M

Non-Federal (Current)

- University of Nebraska “SPACE2: Space, Policy, Agriculture, Climate, and Extreme Environment.” (co-PI) 2022-2024 \$150k.
- Nebraska Corn Board “Genomes to Fields (G2F) - Predicting Final Yield Performance in Variable Environments.” (PI) 2016-2024. \$350k (*to date*)
- Wheat Innovation Foundation “A Low-Cost, High-Throughput Cold Stress Perception Assay for Sorghum Breeding.” (co-PI) 2019-2023. \$205k

Completed Projects

ICRISAT “Identifying Novel Loci Controlling Priority Traits in Pearl Millet and Sorghum using Supervised Classification Algorithms.” (PI) 2020-2021 \$50k

ARPA-E “CORN- Crop Optimization Realized through Neuralnets” (co-PI) 2020-2022 \$620k

ARPA-E “Low cost wireless chemical sensor networks.” (co-PI) 2019-2022. \$2.2M

NSF “Center for Root and Rhizobiome Innovation.” (Investigator & Management Team Member) 2016-2021. \$20M

NSF “RoL: FELS: EAGER: Genetic constraints on the increase of organismal complexity over time.” (PI) 2018-2022. \$300k

USDA-NIFA “Identifying mechanisms conferring low temperature tolerance in maize, sorghum, and frost tolerant relatives.” (PI) 2015-2020. \$455k

ARPA-E “In-plant and in-soil microsensors enabled high-throughput phenotyping of root nitrogen uptake and nitrogen use efficiency.” (co-PI) 2017-2019. \$1.1M

USDA/NSF Joint Program “PAPM EAGER: Transitioning to the next generation plant phenotyping robots.” (co-PI) 2016-2018. \$285k

North Central Sun Grants “High through put phenotyping to accelerate biomass sorghum improvement.” (co-PI) 2017-2019. \$193k

Daugherty Water for Food Global Institute “Optimizing the Water Use Efficiency of C4 Grain Crops Using Comparative Phenomics and Crop Models to Guide Breeding Targets.” (PI) 2017-2019. \$27k

Agricultural Research Division “A High Throughput Phenotyping Reference Dataset for GWAS in Sorghum” (PI) 2016-2018. \$100k

ICRISAT “Application of tGBS And Genomic Selection to a Hybrid Pearl Millet Breeding Program.” 2015-2017. \$45k

ConAgra “Marker Discovery & Genetic Diversity.” (replacement PI) 2014-2017. \$162k

Iowa Corn Board “Field Deployable Cameras to Quantify Dynamic Whole Plant Phenotypes in the Field.” (PI) 2014-2016. \$43k

Midwest Big Data Hub “Automatic feature extraction pipeline development for high-throughput plant phenotyping” (co-PI) 2017-2018. \$5k

Layman Award “Developing genomic tools in proso millet and comparing water use efficiency among panicoid grass crops (proso millet, corn, sorghum, foxtail millet)” (co-PI) 2014-2015. \$10k

Economic Development

Entrepreneurship

Co-Founder, EnGeniousAg LLC 2017-Present
Designs, manufactures, and deploys low-cost, instant readout, high-performance, field-based nutrient sensors for crops, soil, and water, improving agronomic management practices, increasing grower profitability and reducing the environmental footprint of agriculture.

Founder, Dryland Genetics LLC 2014-Present
Using high throughput quantitative genetics and field phenotyping technologies to develop and commercialize higher yielding cultivars of crops already naturally adapted to using little water and growing arid regions where conventional agriculture fails in the absence of irrigation.

Co-Founder, Data2Bio LLC 2010-Present
Providing patented tGBS genotyping and genomic selection services to public and private sector plant and animal breeders in the USA and China.

Entrepreneurship-Related Funding

NSF (to EnGeniousAg) “SBIR Phase II: Low-cost in-planta nitrate sensor” 2023-2025 \$1M
 NSF (to EnGeniousAg) “SBIR Phase I: Low-cost in-planta nitrate sensor” 2019-2022 \$225k
 USDA (to EnGeniousAg) “SBIR Phase I: Low-cost field-deployable sensors to monitor nitrate in soil and water.” 2019-2021 \$100k
 Raised more than \$7M in private sector equity funding.

Industry Cooperation

Scientific Advisory Council, GeneSeek, Inc	2017-Present
Advisor, DeepCropVision (<i>UNL student lead-startup</i>)	2022-Present
Advisory Board, Afflo Sensors	2023-Present
External Advisor to the Scientific Advisory Board, Indigo Agriculture	2017
External Advisor to the Scientific Advisory Board, Syngenta AG	2016

Advising

Current Graduate Advisees: Michael Tross (PhD, Complex Biosystems, UNL Life Sciences Fellow), Nikee Shrestha (PhD, Complex Biosystems, FFAR Career Development Fellow), Waqar Ali (PhD, Complex Biosystems, US-Pakistan Knowledge Corridor Scholar), Jensina Davis (PhD, Complex Biostems, NSF Grad Fellow) Ramesh Kanna Mathivanan (PhD, Agronomy and Horticulture), Hongyu Jin (co-advised, PhD, Complex Biosystems), Fangyi Li (co-advised, PhD, Complex Biosystems),

Graduated Advisees: Daniel Carvalho (PhD, Agronomy & Horticulture), Zhikai Liang (PhD, Agronomy & Horticulture), Chenyong Miao (PhD, Agronomy & Horticulture, Widaman Fellow), Nate Korth (co-advised, PhD, Food Science, FFAR Fellow), Preston Hurst (MS, Agronomy & Horticulture), Xi-anjun Lai (PhD, Sichuan Agriculture University), Xiuru Dai (PhD, Shandong Agriculture University), Santos Yenandy Barrera Lemus (co-advised, PhD, Agronomy & Horticulture) Mackenzie Zweiner (MS, Agronomy & Horticulture), Kyle Linders (co-advised MS, Agronomy & Horticulture) Bhushit Agarwal (co-advised, MS, Computer Science & Engineering), Srinidhi Bashyam (co-advised, MS, Computer Science & Engineering)

Undergraduate Researchers: 7 NSF supported REU (Research Experience for Undergraduates) students; 3 UCARE (Undergraduate Creative Activities and Research Experience) students; and 36 undergraduate students supported by regular research funding.

High School Researchers: 2 students supported through the Young Nebraska Scientist program; 1 supported by regular research funding.

Publications

H-Index: 44

Lab members in **bold**, *authors contributed equally, ‡undergraduate author, §corresponding author

Preprints

Sahay S, Shrestha N, Moura Dias H, Mural RV, Grzybowski M, Schnable JC[§], Glowacka K[§] Comparative GWAS identifies a role for Mendel's green pea gene in the nonphotochemical quenching kinetics of sorghum, maize, and arabidopsis. *bioRxiv* doi: 10.1101/2023.08.29.555201

Engelhorn J, Snodgrass S, Kok A, Seetharam A, Schneider M, Kiwit T, Singh A, Banf M, Khaipho- Burch M, Runcie D, Camargo V, **Torres-Rodriguez JV**, **Sun G**, Stam M, Fiorani F, **Schnable JC**, Bass H, Hufford M, Stich B, Frommer W, Ross-Ibarra J, Hartwig T[§] Phenotypic variation in maize can be largely explained by genetic variation at transcription factor binding sites. *bioRxiv* doi: 10.1101/2023.08.08.551183

Li D, Wang Q, Tian Y, Lyu X, Zhang H, Sun Y, Hong H, Gao H, Li Y, Zhao C, Wang J, Wang R, Yang J, Liu B, Schnable PS, **Schnable JC**[§], Li Y[§], Qiu L[§] Transcriptome brings variations of gene expression, alternative splicing, and structural variations into gene-scale trait dissection in soybean. *bioRxiv* doi: 10.1101/2023.07.03.545230

Faculty Publications

134. DiMario R, Kophs A, Apalla A, **Schnable JS**, Cousins A[§] (2023) Multiple highly expressed phosphoenolpyruvate carboxylase genes have divergent enzyme kinetic properties in two C₄ grasses. *Annals Of Botany* doi: 10.1093/aob/mcad116
133. Barnes AC, Myers JL, Surber SM, **Liang Z**, Mower JP, **Schnable JC**, Roston RL[§] (2023) Oligogalactolipid production during cold challenge is conserved in early diverging lineages. *Journal of Experimental Botany* doi: 10.1093/jxb/erad241
132. Chen J, Wang Z, Tan K, Huang W, Shi J, Li T, Hu J, Wang K, Xin B, Zhao H, Song W, Hufford MB, **Schnable JC**, Ware DH, Jin W, Lai J[§] (2023) A complete telomere-to-telomere assembly of the maize genome. *Nature Genetics* doi: 10.1038/s41588-023-01419-6
Selected as an Editor's Choice by MaizeGDB Editorial Board August 2023
131. Kick D, Wallace J, **Schnable JC**, Kolkman JM, Alaca B, Beissinger TM, Ertl D, Flint-Garcia S, Gage JL, Hirsch CN, Knoll JE, de Leon N, Lima DC, Moreta D, Singh MP, Weldekidan T, Washburn JD[§] Yield prediction through integration of genetic, environment, and management data through deep learning. *G3* doi: 10.1093/g3journal/jkad006 *bioRxiv* doi: 10.1101/2022.07.29.502051
130. Lima DC[§], Aviles AC, Alpers RT ... **Schnable JC** (26th of 37 authors) ... Wissner RJ, Xu W, de Leon N (2023) 2018–2019 field seasons of the Maize Genomes to Fields (G2F) G x E project. *BMC Genomic Data* doi: 10.1186/s12863-023-01129-2
129. Sahay S*, **Grzybowski M***, **Schnable JC**, Glowacka K[§] (2023) Genetic control of photoprotection and photosystem II operating efficiency in plants. *New Phytologist* doi: 10.1111/nph.18980
128. Wijewardane NK, Zhang H, Yang J, **Schnable JC**, Schachtman DP, Ge Y[§] (2023) A leaf-level spectral library to support high throughput plant phenotyping: Predictive accuracy and model transfer. *Journal of Experimental Botany* doi: 10.1093/jxb/erad129
127. **Sun G**, Yu H, Wang P, Lopez-Guerrero MG, **Mural RV**, **Mizero ON**[‡], **Grzybowski M**, Song B, van Dijk K, Schachtman DP, Zhang C, **Schnable JC**[§] (2023) A role for heritable transcriptomic variation in maize adaptation to temperate environments. *Genome Biology* doi: 10.1186/s13059-023-02891-3 *Selected as an Editor's Choice by MaizeGDB Editorial Board* August 2023
126. Lima DC, Aviles AC, Alpers RT ... **Schnable JC** (24th of 35 authors) ... Weldekidan T, Xu W, de Leon N[§] (2023) 2020–2021 field seasons of Maize GxE project within the Genomes to Fields Initiative. *BMC Research Notes* doi: 10.1186/s13104-023-06430-y

125. Gaillard M, Benes B, **Tross MC, Schnable JC** (2023) Multi-view triangulation without correspondences. *Computers and Electronics in Agriculture* doi: 10.1016/j.compag.2023.107688
124. **Grzybowski M[§], Mural RV, Xu G, Turkus, J, Yang Jinliang, Schnable JC** (2023) A common resequencing-based genetic marker dataset for global maize diversity. *The Plant Journal* doi: 10.1111/tpj.16123 **Cover Article, March 2023 "Research Highlight"** doi: 10.1111/tpj.16123
123. **Sun G**, Wase N, Shu S, Jenkins J, Zhou B, Chen C, Sandor L, Plott C, Yoshinga Y, Daum C, Qi P, Barry K, Lipzen A, Berry L, Gottilla T, **Foltz A[‡]**, Yu H, O'Malley R, Zhang C, Devos KM, **Sigmon B**, Yu B, Obata T, Schmutz J[§], **Schnable JC[§]** (2023) Genome of *Paspalum vaginatum* and the role of trehalose mediated autophagy in increasing maize biomass. *Nature Communications* doi: 10.1038/s41467-022-35507-8 bioRxiv doi: 10.1101/2021.08.18.456832 **"Research Highlight" in Nature Plants** doi: 10.1038/s41477-023-01343-x
122. **Grzybowski M[§], Zweiner M, Jin H**, Wijewardane NK, Atefi A, Naldrett MJ, Alvarez S, Ge Y, **Schnable JC** (2022) Variation in morpho-physiological and metabolic responses to low nitrogen stress across the sorghum association panel. *BMC Plant Biology* doi: 10.1186/s12870-022-03823-2 bioRxiv doi: 10.1101/2022.06.08.495271
121. Yang Q, Van Haute M, **Korth N**, Sattler S, Toy J, Rose D, **Schnable JC**, Benson A (2022) Genetic analysis of seed traits in Sorghum bicolor that affect the human gut microbiome. *Nature Communications* doi: 10.1038/s41467-022-33419-1 **"In Brief" in Nature Reviews Genetics** doi: 10.1038/s41576-022-00543-z **"Genome Watch" in Nature Reviews Microbiology** doi: 10.1038/s41579-022-00850-6
120. Li D, Bai D, Tian Y, Li Y, Zhao C, Wang Q, Gou S, Gu Y, Luan X, Wang R, Yang J, Hawkesford MJ, **Schnable JC**, Jin X, Qiu L (2022) Time series canopy phenotyping enables the identification of genetic variants controlling dynamic phenotypes in soybean. *Journal of Integrative Plant Biology* doi: 10.1111/jipb.13380
119. Khound R, **Sun G, Mural RV, Schnable JC**, Santra D[§] (2022) SNP Discovery in Proso millet (*Panicum miliaceum* L.) using low-pass genome sequencing. *Plant Direct* doi: 10.1002/pld3.447
118. Zhang K, Yang Y, Zhang X, Zhang L, Fu Y, Guo Z, Chen S, Wu J, **Schnable JC**, Yi K, Wang X, Cheng F[§] (2022) The genome of *Orychophragmus violaceus** provides genomic insights into the evolution of Brassicaceae polyploidization and its distinct traits. *Plant Communications* doi: 10.1016/j.xplc.2022.100431
117. **Mural RV, Sun G, Grzybowski M, Tross MC, Jin H, Smith C**, Newton L, Andorf CM, Woodhouse MR, Thompson AM, **Sigmon B, Schnable JC[§]** (2022) Association mapping across a multitude of traits collected in diverse environments identifies pleiotropic loci in maize. *Gigascience* doi: 10.1093/gigascience/giac080 bioRxiv doi: 10.1101/2022.02.25.480753
116. Meier M, Xu G, Lopez-Guerrero, Li G, **Smith C, Sigmon B**, Herr J, Alfano J, Ge Y, **Schnable JC**, Yang J[§] (2022) Maize root-associated microbes likely under adaptive selection by the host to enhance phenotypic performance. *eLife* doi: 10.7554/eLife.75790
115. **Korth N**, Parsons L, Van Haute M, Yang Q, Hurst JP, **Schnable JC**, Holding DR, Benson AK[§] The unique seed protein composition of quality protein popcorn promotes growth of beneficial bacteria from the human gut microbiome. *Frontiers in Microbiology* doi: 10.3389/fmicb.2022.921456
114. **Mural RV, Schnable JC[§]** (2022) Can the grains offer each other helping hands? Convergent molecular mechanisms associated with domestication and crop improvement in rice and maize. *Molecular Plant* doi: 10.1016/j.molp.2022.04.003 *Peer Reviewed Invited Perspective*
113. Boatwright JL, Sapkota S, **Jin H, Schnable JC**, Brenton Z, Boyles R, Kresovich S[§] (2022) Sorghum Association Panel whole-genome sequencing establishes pivotal resource for dissecting genomic diversity. *The Plant Journal* doi: 10.1111/tpj.15853 bioRxiv doi: 10.1101/2021.12.22.473950

112. Rodene E, Xu G, Delen SP, **Smith C**, Ge Y, **Schnable JC**, Yang J[§] (2022) A UAV-based high-throughput phenotyping approach to assess time-series nitrogen responses and identify traits associated genetic components in maize. *The Plant Phenome Journal* doi: 10.1002/ppj2.20030 bioRxiv doi: 10.1101/2021.05.24.445447
111. Yu H, Sandhu J, **Sun G**, Nguyen H, Clemente T, **Schnable JC**, Walia H, Xie W, Yu B, Mower JP, Zhang C[§] (2022) Pervasive misannotation of the smallest microexons that are evolutionarily conserved and crucial for gene function in plants. *Nature Communications* doi: 10.1038/s41467-022-28449-8
110. **Tross MC**[‡], Gaillard M, **Zweiner M**[‡], **Miao C**, **Grove RJ**, Li B, Benes B, **Schnable JC**[§] (2021) 3D reconstruction identifies loci linked to variation in angle of individual sorghum leaves. *PeerJ* doi: 10.7717/peerj.12628 bioRxiv doi: 10.1101/2021.06.15.448566
109. Diao X[§], Zhang H, Tang S, **Schnable JC**, He Q, Gao Y, Luo M, Jia G, Feng B, Zhi H (2021) Genome-Wide DNA polymorphism analysis and molecular marker development of *Setaria italica* variety 'SSR41' and application in positional cloning of *Setaria* white leaf sheath gene SiWLS1. *Frontiers in Plant Science* doi: /10.3389/fpls.2021.743782
108. **Miao C**, **Guo A**[‡], Thompson AM, Yang J, Ge Y, **Schnable JC**[§] (2021) Automation of leaf counting in maize and sorghum using deep learning. *The Plant Phenome Journal* doi: 10.1002/ppj2.20022 bioRxiv doi: 10.1101/2020.12.19.423626
107. **Sun G**[§], **Mural RV**, **Turkus JD**, **Schnable JC** (2021) Quantitative resistance loci to southern rust mapped in a temperate maize diversity panel. *Phytopathology* doi: 10.1094/PHYTO-04-21-0160-R bioRxiv doi: 10.1101/2021.04.02.438220
106. **Mural RV**, **Grzybowski M**, **Miao C**, **Damke A**[‡], Sapkota S, Boyles RE, Salas Fernandez MG, Schnable PS, **Sigmon B**, Kresovich S, **Schnable JC**[§] (2021) Meta-analysis identifies pleiotropic loci controlling phenotypic trade-offs in sorghum. *Genetics* doi: 10.1093/genetics/iyab087 bioRxiv doi: 10.1101/2020.10.27.355495
105. **Grzybowski M**, Wijewardane NK, Atefi A, Ge Y, **Schnable JC**[§] (2021) The potential of hyperspectral reflectance as a tool for quantitative genetics in crops. *Plant Communications* doi: 10.1016/j.xplc.2021.100209
104. Zhou Y, Kusmec A, Mirnezami SV, Srinivasan L, Jubery TZ, **Schnable JC**, Salas-Fernandez MG, Nettleton D, Ganapathysubramanian B, Schnable PS[§] (2021) Identification and utilization of genetic determinants of trait measurement errors in image-based, high-throughput phenotyping. *The Plant Cell* doi: 10.1093/plcell/koab134
103. Atefi A, Ge Y[§], Pitla S, **Schnable JC** (2021) Robotic Technologies for High-Throughput Plant Phenotyping: Reviews and Perspectives. *Frontiers in Plant Science* doi: 10.3389/fpls.2021.611940
102. Alzadjali A, Veeranampalayam-Sivakumar A, Alali MH, Deogun JS, Scott S, **Schnable JC**, Shi Y[§] (2021) Maize tassel detection from UAV imagery using deep learning. *Frontiers in Robotics and AI* 10.3389/frobt.2021.600410
101. Meier MA, Lopenz-Guerrero MG, Guo M, Schmer MR, Herr JR, **Schnable JC**, Alfano JR, Yang J[§] (2021) Rhizosphere microbiomes in a historical maize/soybean rotation system respond to host species and nitrogen fertilization at genus and sub-genus levels. *Applied and Environmental Microbiology* doi: 10.1128/AEM.03132-20 bioRxiv doi: 10.1101/2020.08.10.244384
100. Serb DD, **Meng X**, **Schnable JC**, Bashir E, Michaud JP, Vara Prasad PV, Perumal R (2021) Comparative transcriptome analysis reveals genetic mechanisms of sugarcane aphid resistance in grain sorghum. *International Journal of Molecular Sciences* doi: 10.3390/ijms22137129
99. Hurst JP, **Schnable JC**, Holding DR[§] (2021) Tandem duplicate expression patterns are conserved between maize haplotypes of the α -zeingene family. *Plant Direct* doi: 10.1002/pld3.346

98. Busta L, Schmitz E, Kosma D, **Schnable JC**, Cahoon EB[§] (2021) A co-opted steroid synthesis gene, maintained in sorghum but not maize, is associated with a divergence in leaf wax chemistry. Proceedings of the National Academy of Sciences of the United States of America doi: 10.1073/pnas.2022982118
97. **Meng X, Liang Z, Dai X, Zhang Y**, Mahboub S, Ngu DW[‡], Roston RL, **Schnable JC**[§] (2021) Predicting transcriptional responses to cold stress across plant species. Proceedings of the National Academy of Sciences of the United States of America. doi: 10.1073/pnas.2026330118 bioRxiv doi: 10.1101/2020.08.25.266635
96. Sankaran S[§], Marzougui A, **Hurst JP**, Zhang C, **Schnable JC**, Shi Y (2021) Can high resolution satellite imagery be used in high-throughput field phenotyping? Transactions of the ASABE doi: 10.13031/trans.14197
95. Zhu Y, Chen Y, Ali Md. A, Dong L, Wang X, Archontoulis SV, **Schnable JC**, Castellano MJ[§] (2021) Continuous in situ soil nitrate sensors: a comparison with conventional measurements and the value of high temporal resolution measurements. Soil Science Society of America Journal doi: 10.1002/saj2.20226 **Recipient of the Soil Science Society of America Best Paper Award in 2023**
94. **Lai X**, Bendix C, **Zhang Y**, **Schnable JC**, Harmon FG[§] (2021) 72-hour diurnal RNA-seq analysis of fully expanded third leaves from maize, sorghum, and foxtail millet at 3-hour resolution. BMC Research Notes doi: 10.1186/s13104-020-05431-5
93. Rogers AR, Dunne JC, Romay C ... **Schnable JC** (24th of 39 authors) ... Kaeppler S, De Leon N, Holland JB[§] (2021) The importance of dominance and genotype-by-environment interactions on grain yield variation in a large-scale public cooperative maize experiment. G3:Genes|Genomes|Genetics doi: 10.1093/g3journal/jkaa050
Selected as an Editor's Choice by MaizeGDB Editorial Board February 2021
92. Jarquin D, de Leon N, Romay C ... **Schnable JC** (24th of 33 authors) ... Wissner RJ, Xu W, Lorenz A (2021) Utility of climatic information via combining ability models to improve genomic prediction for yield within the Genomes to Fields maize project. Frontiers in Genetics doi: 10.3389/fgene.2020.592769
91. DiMario RJ, Kophs AN, Pathare VS, **Schnable JC**, Cousins AB[§] (2021) Phosphoenolpyruvate carboxylase kinetic variation provides opportunity to enhance C4 photosynthetic efficiency. The Plant Journal doi: 10.1111/tbj.15141
90. Thudi M, Palakurthi R, **Schnable JC**, Chitikineni A, Dreisigacker S, Mace E, Srivastava RK, Satyavathi CT, Odeny D, Tiwari VK, Lam HM, Hong YB, Singh VK, Li G, Xu Y, Chen X, Nguyen H, Sivasankar S, Close TJ, Stein N, Jackson SA, Shubo W, Varshney RK[§] (2021) Genomic resources in plant breeding for sustainable agriculture. Journal of Plant Physiology doi: 10.1016/j.jplph.2020.153351
89. **Raju SKK**, Atkins M[‡], **Enerson A**[‡], **Carvalho DS**, Studer AJ, Ganapathysubramanian B, Schnable PS, **Schnable JC**[§] (2020) Leaf Angle eXtractor - A high throughput image processing framework for leaf angle measurement in maize and sorghum. Applications in Plant Sciences doi: 10.1002/aps3.11385
88. Gaillard M*, **Miao C***, **Schnable JC**[§], Benes B[§] (2020) Voxel carving based 3D reconstruction of sorghum identifies genetic determinants of radiation interception efficiency. Plant Direct doi: 10.1002/pld3.255 bioRxiv doi: 10.1101/2020.04.06.028605v1
87. **Raju SKK**[§], Thompson AM, **Schnable JC** (2020) Advances in plant phenomics: From data and algorithms to biological insights. Applications in Plant Sciences doi: 10.1002/aps3.11386
86. Atefi A, Ge Y[§], Pitla S, **Schnable JC** (2020) Robotic detection and grasp of maize and sorghum: stem measurement with contact. Robotics doi: 10.3390/robotics9030058
85. Wang R, Qiu Y,[§] Zhou Y, **Liang Z**, **Schnable JC** (2020) A high-throughput phenotyping pipeline for image processing and functional growth curve analysis. Plant Phenomics doi: 10.34133/2020/7481687

84. **Lai X**, Bendix C, **Yan L**, **Zhang Y**, **Schnable JC**, Harmon F[§] (2020) Interspecific analysis of diurnal gene regulation in panicoid grasses identifies known and novel regulatory motifs. BMC Genomics doi: 10.1186/s12864-020-06824-3
Selected as an Editor's Choice by MaizeGDB Editorial Board October 2020
83. Han J, Wang P, Wang Q, Lin Q, Yu G, **Miao C**, Dao Y, Wu R, **Schnable JC**, Tang H, Wang K[§] (2020) Genome-wide characterization of DNase I-hypersensitive sites and cold response regulatory landscapes in grasses. The Plant Cell doi: 10.1105/tpc.19.00716
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3. Tang H, Lyons E, **Schnable JC** (2013) Early history of the angiosperms. Genomes of Herbaceous Land Plants. Editor: Andrew Paterson Publisher: Academic Press
2. Goff SA, **Schnable JC**, Feldmann KA (2013) The evolution of plant gene and genome sequencing. Genomes of Herbaceous Land Plants Editor: Andrew Paterson Publisher: Academic Press
1. **Schnable JC** and Freeling M (2012) Maize (*Zea mays*) as a model for studying the impact of gene and regulatory sequence loss following whole genome duplication. Polyploidy and Genome Evolution. Editors: Soltis PS & Soltis DE Publisher: Springer New York, NY

Selected Recent Service

University

Consortium for Integrated Translational Biology (CITB)	2014-Present
UNL Faculty Greenhouse Committee	2015-Present
Nebraska Food for Health Center Faculty Advisory Committee	2017-Present
Department of Agronomy and Horticulture Awards Committee	2019-Present
Department of Agronomy and Horticulture Graduate Admissions Committee	2019-Present
Biotech Seminar Series Committee	2017-2019
Agronomy and Horticulture Faculty Advisory Committee	2017-2019
Agronomy and Horticulture Strategic Planning Committee	2018-2019
Department of Agronomy and Horticulture Peer Evaluation Committee	2016-2018
Search Committee, Nebraska EPSCoR/IDeA Director	2018
Organizing Committee “International Millet Symposium 2018”	2018
Organizing Committee “Predictive Crop Design, Genome to Phenome”	2017
Search Committee, Director of Phenomic Sciences	2017
Search Committee, Agricultural Research Division	2016
Search Committee, Quantitative Life Sciences Initiative	2016
Search Committee, Department of Agronomy and Horticulture	2016
Organizing Committee “Plant Phenomics: from pixels to traits”	2015

Professional

Associate Editor: Molecular Plant	2014-Present
Guest Editor: The Plant Cell	2019-Present
Data Management Subcommittee, Maize Genetics Research Collaboration Network	2018-Present
MaizeGDB Advisory Committee	2018-Present
Grant Reviewer: NSF (panel & ad hoc), USDA (panel), JGI (panel), Genome British Columbia (ad hoc).	
Peer Reviewer (selected, recent): Bioinformatics, BMC Genomics, BMC Plant Biology, G3: Genes Genomes Genetics, Genome Biology, Genome Biology & Evolution, Heredity, Journal of Experimental Botany, JoVE, Molecular Biology and Evolution, Molecular Plant, Nature Communications, Nature Plants, New Phytologist, Nucleic Acids Research, PeerJ, Photosynthesis Research, Physiologia Plantarum, Plant Cell, Plant Cell & Environment, Plant Direct, The Plant Genome, The Plant Journal, Plant Methods, Plant Physiology, PLoS Genetics, Proceedings of the National Academy of Sciences, Science Science Advances	

Invited Talks:

At External Institutions

University of Georgia-Athens, Athens, Georgia, USA	2023
University of Arizona, Tucson, AZ, USA	2023
Oregon State University, Corvallis, OR, USA	2023
Carnegie Institution for Science, Stanford, CA, USA	2022
Center for Sorghum Improvement, Manhattan, KS, USA	2022 (<i>Remote</i>)
CIRAD, Montpellier, France	2022
California State East Bay, Hayward, CA, USA	2021 (<i>Remote, COVID</i>)
University of Missouri, Columbia, MO, USA	2020 (<i>Remote, COVID</i>)
Rutgers University, New Brunswick, NJ, USA	2020 (<i>Remote, COVID</i>)
Bayer Crop Science, St. Louis, MO, USA	2020 (<i>Remote, COVID</i>)
University of Bonn, Bonn, Germany	2020 (<i>Remote, COVID</i>)
King Abdullah University of Science and Technology, Jeddeh, Saudi Arabia	2020 (<i>Remote, COVID</i>)
University of Hawaii, Manoa, HI, USA (<i>Brewbaker Lecture</i>)	2019
Miami University, Oxford, OH, USA	2019
University of Massachusetts Amherst, Oxford, OH, USA	2019
Cornell University, Ithaca, NY, USA	2019
Research Triangle Park, NC, USA	2018
Washington State University, Pullman, WA, USA	2018
University of Delaware, Newark, DE, USA	2018
Chinese Academy of Agricultural Sciences, Beijing, China	2017
Beijing Academy of Agricultural and Forestry Sciences, Beijing, China	2017
University of Minnesota, St. Paul, MN, USA	2017
Iowa State University, Ames, IA, USA	2017
University of Missouri-Columbia, Columbia, MO, USA	2017
Kansas State University, Manhattan, KS, USA	2016
University of Georgia-Athens, Athens, GA, USA	2016
University of California-San Diego, San Diego, CA, USA	2016
Chinese Academy of Agricultural Sciences, Beijing, China	2015
Beijing Academy of Agricultural and Forestry Sciences, Beijing, China	2015
Sichuan Agricultural University, Chengdu, China	2015
Huazhong Agricultural University, Wuhan, China	2015

Shandong Agricultural University, Tai'an, China	2015
Monsanto, St. Louis, MO, USA	2015
Henan Agricultural University, Zhengzhou, China	2014
Chinese Academy of Tropical Agriculture, Haikou, China	2014
Cornell University, Ithaca, NY, USA	2014
Interdisciplinary Plant Group Seminar Series, University of Missouri, Columbia, MO, USA	2012
Donald Danforth Plant Science Center, St. Louis, MO, USA	2012
China Agricultural University, Beijing, China	2012
Chinese Academy of Agricultural Sciences, Beijing, China	2012
MaizeGDB, Ames, IA, USA	2012
University of Arizona, Tucson, AZ, USA	2011

At External Conferences

Invited presentations only. Excludes presentations selected based on abstracts or applications.

Purdue Plant Science Symposium (Student Organized), West Lafayette, IN USA	2023
IROS (Intelligent Robots and Systems), Detroit, MI USA	2023
Sorghum in the 21st Century, Montpellier, France	2023
Corteva Symposium Series, North of Rio de Janeiro State University (Student Organized), Campos dos Goytacazes, Brazil	2023(Remote)
Iowa Biotech Showcase, Ankeny, IA USA	2023
SFBV (French Society of Plant Biology), Montpellier, France	2022
Plant Response to Stresses and Environmental Signals, Beijing, China	2022 (Remote)
IPPN-CEPPG Workshop on Environment Simulation and Phenotyping, Gatersleben, Germany	2022 (Remote)
Michigan State Genome Sciences Symposium (Student Organized), East Lansing, MI, USA	2022
Nexus Informatics, Kansas City, MO, USA	2022
Molecular Plant Virtual Seminar Series	2022 (Remote, COVID)
DIGICROP 2022	2022 (Remote, COVID)
Machine Learning for Cyber-Agricultural Systems (Keynote)	2021 (Remote, COVID)
Plant Science Symposium West Africa (Student Organized)	2021 (Remote, COVID)
Soybean Breeders Workshop	2021 (Remote, COVID)
NAPPN 2021	2021 (Remote, COVID)
DIGICROP 2020	2020 (Remote, COVID)
National Association of Plant Breeders Annual Meeting, Lincoln, NE, USA	2020 (Remote, COVID)

iGenomX Session, Plant and Animal Genome, San Diego, CA, USA	2020
Systems Biology and Ontologies Session, Plant and Animal Genome, San Diego, CA, USA	2020
Guelph Plant Sciences Symposium (Student Organized), Guelph, Ontario, Canada	2019
Future of Machine Learning for Cyber-Agricultural Systems Panel, Ames, IA, USA	2019
Gene Mapping Session, Plant and Animal Genome, San Diego, CA, USA	2019
Plant Energy Biology Forum, Perth, Australia	2018
The Plant Phenome Journal Webinar Series	2018
Entrepreneurship Panel, USDA FACT: Genomes to Fields, Ames, IA, USA	2018
Plant Phenotype Session, Plant and Animal Genome, San Diego, CA, USA	2018
Plant Genome Evolution, Sitges, Spain	2017
Purdue Plant Science Symposium (Student Organized), West Lafayette, IN, USA	2017
P ² IRC Annual Symposium, Saskatoon, Saskatchewan, Canada	2017
Maize Tools and Resources (Maize Genetics Conference pre-meeting), St. Louis, MO, USA	2017
Phenome, Tucson, AZ, USA	2017
Corn Breeding Research Meeting, Jacksonville, FL, USA	2016
Molecular Plant Symposium: From Model Species to Crops, Shanghai, China	2015
Corn Breeding Research Meeting, St. Charles, IL, USA	2015
Life Technologies Session, Plant and Animal Genome, San Diego, CA, USA	2015
Maize Session, Plant and Animal Genome, San Diego, CA, USA	2015
Millet as Crop: Past and Future, Aohan, Inner Mongolia, China	2014
Plant Genomes in China Meeting, Tai'an, China	2012
American Society of Plant Biology, Austin, TX, USA	2012
Polyploidy Session, Plant and Animal Genome, San Diego, CA, USA	2012
CSSA Translational Genomics Session, Plant and Animal Genome, San Diego, CA, USA	2012

Internal

CROPS Entrepreneurship/Industry Career Panel (Student Organized), UNL	2023
Complex Biosystems Seminar Series, UNL	2021 (<i>In Person, COVID</i>)
Agronomy & Horticulture Departmental Seminar Series, UNL	2020 (<i>Remote, COVID</i>)
Nebraska Plant Science Symposium (Student Organized)	2019
UNL Plant Phenomics Symposium	2018
NeDA 2017: 2nd Nebraska Data Analytics Workshop, UNL	2017
Water for Food Global Conference, UNL	2017
Complex Biosystems Seminar Series, UNL	2017

Food Science Departmental Seminar Series, UNL	2016
Animal Science Departmental Seminar Series, UNL	2016
Agronomy & Horticulture Departmental Seminar Series, UNL	2015
Plant Science Retreat, UNL	2014

Professional Memberships

American Society of Plant Biology
Crop Science Society of America
North American Plant Phenotyping Network
American Association for the Advancement of Science